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FLOOD INSURANCE STUDY

CITY OF BROOKSVILLE, FLORIDA
HERNANDO COUNTY

REVISED:

SEPTEMBER 18, 1986

Federal Emergency Management Agency

COMMUNITY NUMBER -120333

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NOTICE TO
FLOOD INSURANCE STUDY USERS

Individual components of this Flood Insurance Study (i.e., text, tables, profiles, and maps) are subject to revision as additional data become available. Because revised components may be issued separately, study users should consult the community map repository for those components that are currently effective.

In cases where this Flood Insurance Study and any components thereof warrant revision, a Revisions Description section may be incorporated into this text. When applicable, study users should refer to the Revisions Description to obtain pertinent data and information concerning revisions.

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FLOOD INSURANCE STUDY
CITY OF BROOKSVILLE, FLORIDA

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the City of Brooksville, Hernando County, Florida, and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study will be used to convert the City of Brooksville to the regular program of flood insurance by the Federal Emergency Management Agency (FEMA). Local and regional planners will use this study in their efforts to promote sound flood plain management.

In some states or communities, flood plain management criteria or regulations may exist that are more restrictive or comprehensive than those on which these Federally-supported studies are based. These criteria take precedence over the minimum Federal criteria for purposes of regulating development in the flood plain, as set forth in the Code of Federal Regulations at 44 CFR, 60.3 (d). In such cases, however, it shall be understood that the state (or other jurisdictional agency) shall be able to explain these requirements and criteria.

1.2 Authority and Acknowledgments

The source of authority for this Flood Insurance Study is the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

Approximate flood boundaries for this study were determined by Gee & Jenson Engineers-Architects-Planners, Inc., the study contractor, for the Federal Emergency Management Agency under Contract No. H-4779. This study was completed in July 1980.

Areas of flooding and flood elevation data in the extreme southwest portion of the city were obtained from the approximate 100-year flood elevation data for Peck Sink Watershed, delineation dated May 1979 and prepared by the Southwest Florida Water Management District (Reference1).

1.3 Coordination

Areas subject to flooding were identified at a meeting attended by representatives of the City of Brooksville, FEMA and the study contractor on May 1, 1978. The legal announcement of the beginning of the study and stating its objectives was placed in the Sun Journal, the local newspaper, on March 9, 1979.

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During the course of the study, contacts were maintained with the City of Brooksville for general community information and for historical flood data. Contacts were also made with the following in an attempt to explore all possible sources of data:

The Southwest Florida Water Management District
Florida Geological Survey
U.S. Geological Survey
Florida Department of Transportation
Florida Department of Environmental Regulation

On May 4, 1981, the results of the study were reviewed at the final meeting attended by community officials, the Southwest Florida Water Management District, FEMA and the study contractor. The study was acceptable to the community.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated area of the City of Brooksville, Hernando County, Florida. The area of study is shown on the Vicinity Map (Figure 1).

Approximate methods of analysis were used for this study since the areas are subject to minimal flood hazard, and drainage areas are less than one square mile. The study includes the hydrologic analysis and evaluation of the flooding from rainfall and considers the conveyance capacity of open channels and water courses. Generally, it does not delineate ponding or backwater flooding which results from local drainage problems such as inadequate culvert sizes, obstructions and the like. It is presumed that such causes of local flooding will be the responsibility of local entities and be corrected at some future date. It is recognized, however, that areas on the perimeter of the city may be affected by downstream conditions that are not within local jurisdiction.

2.2 Community Description

The City of Brooksville is located in west central Florida, in the central portion of Hernando County. It is situated approximately 45 miles north of Tampa, and approximately 50 miles west of Orlando. The total land area contained within the city limits is approximately three square miles.

According to U.S. Census Bureau figures, the population has increased from 4,060 in 1970 to an estimated 6,176 in 1979 (Reference 2). This represents a growth of about 52 percent for this period and compares with an estimated growth of approximately 124 percent in the county.

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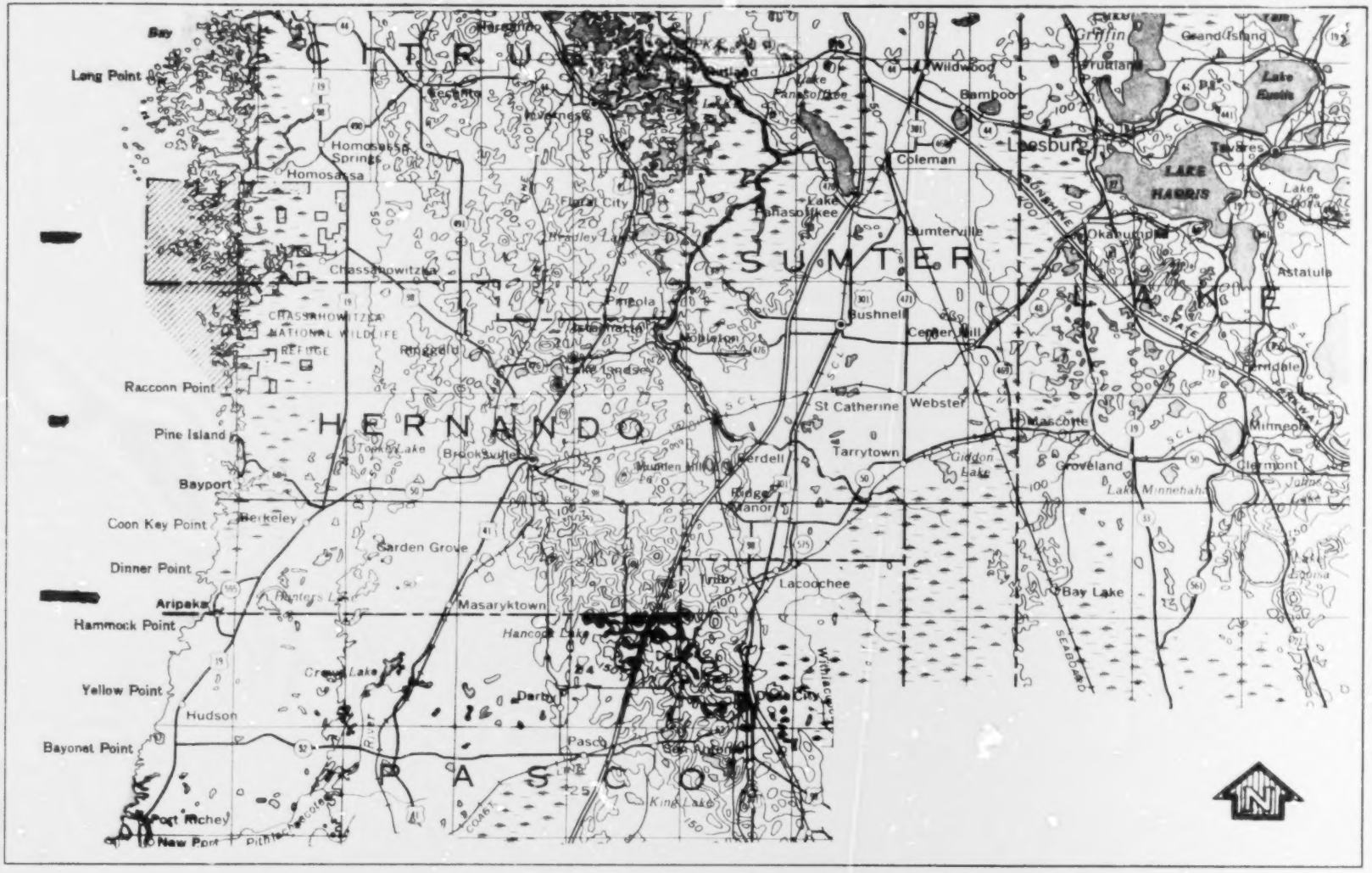

FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF [redacted], FL

[redacted]

APPROXIMATE SCALE

0 8 16 24 MILES

VICINITY MAP

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The city is situated at a relatively high elevation above the level of major river flood plains and coastal lowlands. The terrain is hilly which divides the city into many small drainage areas of about one square mile or less, contributing runoff to small streams and drainage swales. Many of the drainage courses are only seasonally wet.

Approximately 80 percent of the city has been developed, with the remainder of land being vacant or wooded. Within the flood areas studied, development consists mainly of single family residences and a few private businesses. The central business district in the City of Brooksville is centered around the intersection of U.S. Route 41 and State Road 50 Business and residential development extends in all directions from the central business district, while in the more outlying portions of the city, most of the development is adjacent to major highways, such as U S. Route 41, U.S. 98 and State Road 50. The Seaboard Coast Line Railroad also serves the City of Brooksville.

The City of Brooksville area has a diverse economy with major employers being Condenser Products (electronic components), Gay Products (outdoor furniture), Berry Service Corporation (citrus concentrate), Chemical Lime Company (lime), Monsanto Chemical Company (explosives), and the Southwest Florida Water Management District (district headquarters).

The climate of the City of Brooksville is mild and subtropical in nature, subject to winter variations and prevailing easterly winds. The annual average temperature is about 72 degress F and temperatures in January and July average about 60 degrees F and 81 degrees F, respectively. Annual average precipitation is about 55 inches. Approximately 65 percent of the rainfall occurs during the wet season, May through September, with the remaining 35 percent being evenly distributed during the dry season (Reference 3).

2.3 Principal Flood Problems

The City of Brooksville Drainage Plan, (Abstract, April 1979), (Reference 4) describes Brooksville's present drainage system as consisting of open ditch or natural drainage courses, cross culverts and detention-retention ponds. The report makes the observation that most of the major drainage courses were found to be obstructed with vegetation and partly or totally filled with sediments and debris. In addition, structures in need of repair or replacement were identified as well as those which may be impeding flow as a result of inadequate capacity. Flooding, therefore, occurs along streets and water courses, and, as stated, is largely attributable to improper maintenance of the drainage system and inadequate capacity of drainage structures.

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The more serious flooding of recent years in the area occurred during heavy rainfall in 1959, 1960 and 1974. According to local newspaper reports, the Chinsegut goge north of the City of Brooksville recorded a rainfall of more than 15 inches during a three day period in March 1960. In the latter part of June 1974, the Southwest Florida Water Management District gage recorded rainfall of 12.8 inches during a 24-hour period which was estimated to be in excess of a one hundred year precipitation event (an event expected to recur once in one hundred years on the average).

2.4 Flood Protection Measures

The City of Brooksville Drainage Plan (abstract) (Reference 4) indicates that there are three existing detention-retention ponds in use in the city as part of the local drainage system. These include the pond in the northeast section of the city north of Croom Road, a pond just east of Hammock Road and the abandoned rock mine west of U.S. 41. A fourth facility is reportedly being proposed by the developers of the Candlelight area in the southwest section.

The Drainage Plan (Reference 4) recommends a step-by-step program for evaluation and improvement of the present drainage system and provision of additional detention-retention ponds. The extent and rate at which this Plan will be implemented by local government is not known at this time.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude which are expected to be equalled or exceeded once on the average during any 10-, 50-, 100-, and 500-year period (recurrence intervals), have been selected as having special significance for flood plain management and for flood insurance premium rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10, 2, 1, and 0.2 percent chance, respectively, of being equalled or exceeded during any year. Although the recurrence interval represents the long term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than one year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (one percent chance of annual occurrence) in any 50 year period is about 40 percent (four in 10), and for any 90 year period, the risk increases to about 60 percent (six in 10). The analyses reported here reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

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3.1 Hydrologic Analyses

Estimated 100-year flows were determined at various locations along streams and drainage swales in the City of Brooksville. The flows were estimated using the rational method of determining peak discharges. Rainfall intensities were based on extrapolated data from the Florida Department of Transportation Drainage Manual (Reference 5).

3.2 Hydraulic Analyses

Normal depth computations were made at various locations to determine estimates of flood depths for the 100-year frequency flows. These computations were based on the estimated channel sections using roughness factors (the "n" values in Mannings formula) established from field reconnaissance and aerial survey topographic data acquired from the Southwest Florida Water Management District.

All elevations used in this study are referenced to National Geodetic Vertical Datum of 1929 (NGVD); the elevation reference marks used in this study are shown and described on the map.

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

The National Flood Insurance Program encourages state and local governments to adopt sound flood plain management programs. Therefore, each Flood Insurance Study includes a flood boundary map designed to assist communities in developing sound flood plain management measures.

4.1 Flood Boundaries

In order to provide a national standard without regional discrimination, the 100-year flood has been adopted by FEMA as the base flood for purposes of flood plain management measures.

Flood boundaries were drawn using aerial topographic maps at a scale of 1 inch = 200 feet with contour intervals of one foot furnished by the Southwest Florida Water Management District (Reference 6). Mapping was based on photography taken in 1975 and 1977.

The boundaries of the 100-year flood are shown on the Flood Insurance Rate Map (Exhibit 1). Small areas within the flood boundaries may lie above the flood elevations, and therefore not be subject to flooding; owing to limitations of the map scale, or lack of detailed topographic data, such areas are not shown.

Additional areas of flooding were delineated based on previous FEMA Flood Hazard Boundary Maps and Southwest Florida Water Management District photography and topography.

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4.2 Floodways

The floodway is the channel of a stream, plus any adjacent flood plain areas, that must be kept free of encroachment in order that the 100-year flood be carried without substantial increases in flood heights.

The floodway concept is not applicable to shallow flooding and ponding as found in the City of Brooksville. Therefore, floodways were not determined as part of this study.

5.0 INSURANCE APPLICATION

In order to establish actuarial insurance rates, FEMA has developed a process to transform the data from the engineering study into flood insurance criteria. This process includes the determination of flood insurance zone designations for each flooding source affecting the City of Brooksville.

5.1 Flood Insurance Zones

Following the determination of the extent and depth of flooding, the entire incorporated area of the City of Brooksville was divided into zones, each having a specific flood potential or hazard. Each zone was assigned one of the following flood insurance zone designations:

Zone AH:	Special Flood Hazard Areas inundated by types of 100-year shallow flooding where depths are between 1.0 and 3.0 feet; base flood elevations are shown, but no Flood Hazard Factors are determined.
Zone A:	Special Flood Hazard Areas inundated by the 100-year flood, determined by approximate methods; no base flood elevations shown or FHFs determined.
Zone C:	Areas of minimal flooding.

Table 1, "Flood Insurance Zone Data," summarizes the flood elevation differences, FHFs, flood insurance zones, and base flood elevation for each flooding source studied detail in the City of Brooksville.

5.2 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for the City of Brooksville is, for insurance purposes, the principal result of the Flood Insurance Study. This map contains the official delineation of flood insurance zones and is developed in accordance with the latest flood insurance map preparation guidelines published by FEMA.

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FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1% (100-YEAR) FLOOD AND			FLOOD HAZARD FACTOR	ZONE	BASE FLOOD ELEVATION (FEET NGVD)[3]
		10% (10-YEAR)	2% (50-YEAR)	0.2% (500-YEAR)			
Ponding Area 1	0001	*	*	*	*	AH	77
Ponding Area 2	0001	*	*	*	*	AH	99
Ponding Area 3	0001	*	*	*	*	AH	97
Ponding Area 4	0001	*	*	*	*	AH	110
Ponding Area 5	0001	*	*	*	*	AH	100
Ponding Area 6	0001	*	*	*	*	AH	129
Ponding Area 7	0001	*	*	*	*	AH	112
Ponding Area 8	0001	*	*	*	*	AH	113
Ponding Area 9	0001	*	*	*	*	AH	78
Ponding Area 10	0001	*	*	*	*	AH	89
Ponding Area 11	0001	*	*	*	*	AH	90
Ponding Area 12	0001	*	*	*	*	AH	90

[1]Flood Insurance Rate Map Panel [2]Weighted Average [3]Rounded to Nearest Foot

*Not Applicable

TABLE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY OF BROOKSVILLE, FL

(HERNANDO CO.)

FLOOD INSURANCE ZONE DATA

PONDING AREAS 1-12

6.0 OTHER STUDIES

A previous study was prepared for the Department of Housing and Urban Development, FEMA, using approximate study methods. Flood Hazard Boundary Map No. H03, (Reference 7) was prepared from this study. Flooded areas and boundaries indicated on the previous map are more extensive than those shown in this report and apparently reflect flooding as a result of all causes, including local drainage problems, consistent with the scope and nature of the previous study.

The abstract of the Drainage Plan of the Brooksville Comprehensive Plan (Reference 4) makes the general observation that the major drainage courses are severely obstructed with excessive amounts of vegetation, debris and sediments, and that a few of the drainage structures are in need of repair. Additionally, it was noted that other drainage structures may be impeding drainage because of inadequate capacity. These observations are in agreement with the conclusions of this study in that local drainage problems have contributed to widespread flooding experienced in the past.

One hundred year flood plain data prepared by the Southwest Florida Water Management District in connection with their Peck Sink Watershed Study (Reference 1) extends northward to State Road 577 along the south city boundary The extent of flooding shown on the Flood Insurance Rate Map prepared with this study is in agreement with the delineation on the adjacent area shown on the Peck Sink Study.

7.0 LOCATION OF DATA

Survey, hydrologic, hydraulic, and other pertinent data used in this study can be obtained by contacting the Natural and Technological Hazards Division, Federal Emergency Management Agency, 1375 Peachtree Street, N.E., Suite 778, Atlanta, Georgia 30309.

3.0 BIBLIOGRAPHY AND REFERENCES

1. The Southwest Florida Water Management District; Approximate 100-year Flood Elevation for Peck Sink Watershed; Pithlachascotee River Basin, Aerial Photography with Contours, Sheet Mosaic No. 1, Delineation Date 5/79.

2. Florida, Universtiy of; Florida Estimates of Population, April 1, 1979; prepared by the Population Division Bureau of Economic and Business Research, February 1980.

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3. National Oceanic and Atmospheric Administration, Environmental Data Service, National Climatic Center, Asheville, North Carolina; Climate of Florida; 1978.

4. Coastal Engineering Associates, Inc., for the City of Brooksville, Florida; Brooksville Comprehensive Plan (Abstract) Volume V - Drainage Plan, Brooksville, Florida, April 1979.

5. Florida Department of Transportation; Drainage Manual, 2nd Edition, 1976.

6. The Southwest Florida Water Managemnet District; Aerial Photography with Contours; Withlacoochee Phase IV, Sheet No. 1 (Scale 1'=1,000) and Sheet Nos 23-22-19, 26-22-19 and 14-22-19, (Scale 1"=200' photography 1977); Pithlachascotee River Basin, Brooksville Area, Mosaic Sheet No. 1 (Scale 1"-1,000') and Sheet Nos. 27-22-19, 15-22, 19, 21, 22-19, 22-22-19, (Scale 1"200', photography 1975).

7. Federal Insurance Administration, Department of Housing and Urban Development; Flood Hazard Boundary Map H-01-02 and -03, Revised November 21, 1979.

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9.0 REVISIONS DESCRIPTION (Revised September 18, 1986)

9.1 Purpose

The purpose of this Flood Insurance Study Revisions Description is to incorporate new data into this currently effective Flood Insurance Study for the City of Brooksville, Hernando County, Florida. This Revisions Description is intended to provide updated information that aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

9.2 Acknowledgments

The hydrologic analyses for this Revisions Description were obtained from the City of Brooksville. The Federal Emergency Management Agency (FEMA) reviewed and accepted these data for purposes of this revision.

9.3 Scope

Flood delineations at Ponding Area 9 were revised based on a new topographic map. The new topographic map at a scale of 1:1200 (Reference 1) shows a recently built detention pond located in the southwestern corner of the City of Brooksville. The zone designations for several additional small areas of flooding were revised from Zone A to Zone B because their contributing drainage areas were found to cause minimal flooding.

9.4 Other Studies

The delineations in this revision are in agreement with the delineations on the adjacent area shown in the Flood Insurance Study for the Unincorporated Areas of Hernando County (Reference 2). However, due to scale limitations several small areas of flooding in Brooksville are not shown in the Flood Insurance Study for the Unincorporated Areas of Hernando County.

9.5 Location of Data

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, FEMA, 1371 Peachtree Street, NE., Suite 736, Atlanta, Georgia 30309.

9.6 Bibliography and References

1. Brown, Norman C., R.L.S., Topographic Map, southwest corner of Brooksville, Florida, Scale 1:1200, Contour Interval 1 foot: Brooksville, Florida, revised February 1977.

2. Federal Emergency Management Agency, Flood Insurance Study, Hernando County, Unincorporated Areas, Florida, April 1984.

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